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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,284

05/07/2007

Karsten Strehl

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EXAMINER

SOLOMON, BENYAM

ART UNIT

PAPER NUMBER

2123

MAIL DATE

DELIVERY MODE

08/06/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,284	Applicant(s) STREHL, KARSTEN	
	Examiner BENYAM SOLOMON	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05/07/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/26/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. claims 16-29 are presented for examination

Drawings

2. Figures 1, 2, 6 and 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 1 should be labeled as prior art, as per the description on page 2 line 15 and page 15, line 14 of the specification. Figure 2a should be labeled as prior art as described in the spec on page 9, line 16 and page 15, line 17. Figure 6 should be labeled as prior art, as per the description on page 6, line 26 which referred to by states that figure 6 shows a conventional approach. Figure 8 should be labeled as prior art, as per the description on page 7, line 20 for being described in the background section of the specification of the invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seungwoo et al. (Debugging protocol for remote cross development environment) in view of Sano et al. (US5991533).

4. As per claims 16, 28 and 29 Seungwoo teaches a simulation host (host system: pg 394, section 1, Ins 36-40) a simulation target operatively connected to the simulation host (pg 397, section 5, 2nd paragraph, Ins 4-5), wherein an operating system of the simulation target representing at least a part of the control system (OS: pg. 397, section 4.2, 2nd paragraph, Ins 4-6) is reconfigured by the simulation host via a first application programming interface associated with the operating system of the simulation target (Kernel functions: pg 397, section 4.2, 2nd paragraph Ins 4-8: see table 2). Kernel functions include creation, deletions, suspension and resume of processes (tasks);

Seungwoo fails to teach openly a simulation system for a computer-implemented simulation and verification of a control system under development. However Sano teaches a computer-implemented simulation (simulator 66) and verification (verification unit 544) of a control system under development (col. 6, Ins 60-64: see fig 23a).

Both the simulation host and target are hardwares that contain simulation software and where the actual simulation is done on.

Claims 28 and 29 are the method and the apparatus claims corresponding to the system claim 16. Therefore, these claims are rejected for the same reasons applied to claim 16 above.

Seungwoo and Sano are analogous art because they are form the same field of endeavor, namely debugging protocol and verification system. At the time of the invention, it would have been obvious to a person or ordinary skill in the art to combine the teaching of Sano with Seungwoo of to enhance the efficiency of design of a sequence control system using a PLC (col 28, lns 60-63 of Sano).

5. As per claim 17 Seungwoo teaches wherein the operating system is a real-time operating system (RTOS: pg 394, section 1, 1st paragraph, line 2).

6. As per claim 18 Seungwoo teaches wherein the operating system (RTOS) is reconfigured after downloading an executable software onto the target (pg 397, section 5, 1st paragraph, lns 4-8), whereby a real-time behavior of a software of the simulation target is one of defined and altered (pg 397, section 5, 2nd paragraph, lns 1-3). An interactive shell is used to access including reading, writing which changes the configuration of the operating system.

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7. As per claim 19 Seungwoo teaches wherein the first application programming interface associated with the operating system is a part of the operating system(interactive shell: pg 397, section 5, 1st paragraph, lns 8-10). .

8. As per claim 20 Seungwoo teaches a second application programming interface associated with the operating system (QDI) wherein the second application programming interface associated with the operating system is a part of the operating system (pg 395, section 2, paragraph 5, lns 6-10); wherein the first application programming interface associated with the operating system is not part of the operating system (table 2).

9. As per claim 21 Seungwoo teaches wherein the simulation host includes at least one modeling tool and wherein software of the control system is executed on the simulation target (remote debugger: abstract & pg 394, section 1, 2nd paragraph, lns 22-24).

10. As per claim 22 Seungwoo teaches a target server for connecting the at least one modeling tool with the simulation target (target resources: pg 394, section 1, 1st paragraph, lns 12-15).

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11. As per claim 23 Seungwoo teaches wherein the target server includes a protocol driver of a communication protocol used for communication with the simulation target (RTOS: pg 396, section 3, 2nd paragraph, lns 1-6).

12. As per claim 24 Seno teaches a plurality of simulation process modules (logic simulator 66: col. 21, lns 20-27: see fig 25) with corresponding memory modules (disk 53: col.9, lns 54-56) and interface modules (692: see fig 48) wherein the simulation process modules represent distinct memory locations (disk 53) for facilitating inter-module communications (link information: col 11 and 12, X3, X6, and X10).

13. As per claim 25 Sano teaches wherein the computer-implemented simulation (simulator 66) is performed by executing a control system simulation model (virtual system 68: col 23, lns 8-13: see fig 48), and wherein the control system simulation model includes a plurality of sub-models executed on the corresponding plurality of simulation process modules (plc model 681 and process model 682: col 23, lns 12-15: see fig 48).

14. As per claim 26 Seno teaches wherein at least some of the simulation process modules (logic simulator 66: col. 21, lns 20-27: see fig 25) are dynamically reconfigurable by communication via the distinct memory locations (modification: col 12, X10).

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15. As per claim 27, Seungwoo teaches a host-target architecture (pr 397, section 4.2, 2nd paragraph, lns 1-6: see fig 3), comprising: a simulation host (host system: pg 394, section 1, lns 36-40), wherein the simulation host is operatively connected to a simulation target (pg 397, section 5, 2nd paragraph, lns 4-5), and wherein an operating system of the simulation target representing at least a part of the control system (OS: pg. 397, section 4.2, 2nd paragraph, lns 4-6) is reconfigured by the simulation host via a first application programming interface associated with the operating system of the simulation target (Kernel functions: pg 397, section 4.2, 2nd paragraph lns 4-8: see table 2). Kernel functions include creation, deletions, suspension and resume of processes (tasks).

Seungwoo fails to teach openly a host unit for a simulation system for computer-implemented simulation and verification of a control system under development.

However, Seno teaches a host unit for a simulation system for computer-implemented simulation (simulator 66) and verification (verification unit 544) of a control system under development (col. 6, lns 60-64: see fig 23a).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENYAM SOLOMON whose telephone number is (571)270-7694. The examiner can normally be reached on monday/thursday 7:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on (571)272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. S./
Examiner, Art Unit 2123

/Paul L Rodriguez/
Supervisory Patent Examiner,
Art Unit 2123